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BRAXY IN SHEEP: FIELD TESTS OF VACCINE IN 1925-26.*

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The results of the use of Braxy Vaccine in the field in 1924-25 have already been recorded (Dalling, Allen & Mason, *Veterinary Record*, 1925, No. 28, Vol. 5, p. 565, and ibid. *Veterinary Record*, 1926, No. 4, Vol. 6, pp. 65-66). Two further field tests were carried out during the 1925-26 season. The vaccine used was prepared as for the former experiments, and consisted of a mixture of underneutralised vibrion septique toxin-antitoxin and *B. chauvœi* filtrate. Laboratory tests were carried out in guinea-pigs. Tables I and II are records of such tests. Only vaccine conferring complete protection to guinea-pigs was used on sheep.

The field experiment detailed in Table III was arranged by Mr. G. Howie, M.R.C.V.S., late Veterinary Adviser, Armstrong College, Newcastle, who did the actual inoculating and kept in touch with the work throughout the whole experiment. Of 2,215 hoggs injected at the end of September, 1925, and again a fortnight later, 37 or 1·6 per cent. died, while of 504 hoggs uninoculated and kept under exactly similar conditions as the inoculated, 36 or 7·1 per cent. died.

The second field experiment (see Table IV) was carried out under similar conditions. We ourselves inoculated the hoggs. This experiment is of special interest because of the groups of hoggs which received the popular "pig-dung" treatment and which were kept on the same farms and under exactly the same conditions as the inoculated and control sheep. The "pig-dung" method of treatment is largely used in the Braxy districts of Scotland and England. A full description was given by Gaiger (*Journ. Comp. Path. and Therap.*, 1922, Vol. XXXV, Pt. 4, pp. 251-2). The net results of this second experiment

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* The tests were carried out from the Wellcome Physiological Laboratories.

TABLE I.

Guinea-pigs inoculated twice within 14 days with Braxy Vaccine Doses 2 c.c. each. Test 4 weeks after second injection.

Guinea-pig.	Test Dose of V.S. Toxin.	Result.
1	0·5 c.c.	L
2		
3		
4	0·25 c.c.	L
5		
6	0·1 c.c.	L
7		
Controls (uninoculated).		
1	0·5 c.c.	+ 7 m.
2	0·25 c.c.	+ 8 m.
3	0·1 c.c.	+ 0/n.
4	0·05 c.c.	L

Test toxin injected intravenously.

+ 7 m., etc. = Died in 7 minutes, etc. L = Lived.

TABLE II.

Guinea-pigs inoculated twice within 14 days with Braxy Vaccine. Doses 2 c.c. Test 4 weeks after second injection.

Guinea-pig.	Test Dose *B. chauvœi* Culture.	Result.
1	1·0 c.c.	L
2		
3		
4	0·5 c.c.	L
5		
6		
7		
Controls (uninoculated).		
1	1·0 c.c.	+ 48 hrs.
2	0·5 c.c.	+ 3 days
3	0·25 c.c.	+ 3 days
4	0·1 c.c.	L

Test culture injected intramuscularly. L = Lived. + = Died.

TABLE III.

Farm.	Hoggs Inoc.	Died.	Per Cent.	Hoggs Uninoc.	Died.	Per Cent.
1	194	4	2·1	30	4	13·3
2	100	–	0·0	19	2	10·5
3	40	1	2·5	18	–	0·0
4	65	–	0·0	12	1	8·3
5	74	–	0·0	13	–	0·0
6	84	2	2·4	20	6	30·0
7	371	–	0·0	103	4	3·9
8	195	–	0·0	60	3	5·0
9	117	7	5·9	23	1	4·4
10	64	–	0·0	22	2	9·0
11	120	2	1·7	22	2	9·0
12	150	2	1·3	30	2	6·6
13	81	–	0·0	28	–	0·0
14	150	3	2·0	22	1	4·6
15	200	11	5·5	40	2	5·0
16	150	5	3·3	30	3	10·0
17	60	–	0·0	12	3	25·0
	2,215	37	1·6	504	36	7·1

are that of 1,795 inoculated hoggs, 51 or 2·8 per cent. died ; of 1,050 hoggs treated with "pig-dung," 96 or 9·1 per cent. died ; while the death-rate among 953 uninoculated and untreated hoggs was 63 or 6·6 per cent. An analysis of the table will show that if results be taken from farms on which inoculated and uninoculated sheep were kept (Farms A, C, D, E, F, G, H, J, K, and N) 12 out of 623 inoculated hoggs died (1·9 per cent.) and 50 out of 674 controls (7·4 per cent). Again, if farms on which all hoggs were "treated" in some way be considered (Farms B, Q, R and T), of 472 vaccinated hoggs, 22 or 4·6 per cent. died, while of 420 to which "pig-dung" was fed, 56 or 13·3 per cent. died. On six farms (I, L, M, O, P and S) all three groups of hoggs were kept and the results are : (*a*) of 700 vaccinated sheep, 17 or 2·4 per cent. died ; (*b*) the mortality among 630 "pig-dung" treated sheep was 40 or 6·3 per cent. ; (*c*) of 279 controls, 13 or 4·66 per cent. died.

TABLE IV.

Farm	Hoggs Inoc.	Died	%	"Pig-dung" treated	Died	%	Controls	Died	%
A	24	—	0·0	—	—	—	15	—	0·0
B	91	—	0·0	60	2	3·3	—	—	
C	132	2	1·5	—	—	—	53	7	13·2
D	40	—	0·0	—	—	—	44	—	0·0
E	15	—	0·0	—	—	—	6	2	33·3
F	34	—	0·0	—	—	—	12	—	0·0
G	25	1	4·0	—	—	—	25	—	0·0
H	20	—	0·0	—	—	—	30	5	16·6
I	40	—	0·0	183	17	9·3	12	4	33·3
J	43	3	6·9	—	—	—	57	4	7·0
K	186	—	0·0	—	—	—	240	6	2·5
L	150	—	0·0	52	6	11·5	38	4	10·5
M	99	3	3·0	89	6	6·7	30	2	6·6
N	104	6	5·7	—	—	—	192	26	13·5
O	63	2	3·2	224	7	3·1	4	—	0·0
P	152	3	2·0	22	1	4·5	55	—	0·0
Q	122	1	0·8	22	1	4·5	—	—	—
R	59	16	27·1	188	46	24·5	—	—	—
S	196	9	4·6	60	3	5·0	140	3	2·1
T	200	5	2·5	150	7	4·6	—	—	—
	1,795	51	2·8	1,050	96	9·1	953	63	6·6

The deaths recorded in the groups of "treated" and "untreated" sheep are believed to have been due to Braxy. Few *post-mortem* examinations have been carried out, but after investigation we are of opinion that in most instances Braxy was the cause of death, and that the figures recorded are as correct as it is possible to obtain from such a field experiment.

CONCLUSIONS.

(1) In two Braxy districts in Northumberland, the use of vaccine consisting of a mixture of underneutralised vibrion septique toxin-antitoxin and *B. Chauvœi* filtrate reduced the mortality in hoggs from 6·8 per cent. among 1,457 unvaccinated sheep to 2·2 per cent. among 4,010 vaccinated.

(2) The "pig-dung" treatment under controlled conditions in one district apparently had no beneficial effect in preventing Braxy.

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